PUBLIC ABSTRACT

Applicant (primary) name: Harrison R. Cooper Systems, Inc.

Applicant's address: 106 West Second North, Bountiful, Utah 84010

Team Members:

Eimco Process Equipment Co., Inc. – Salt Lake City, Utah
Consol Energy, Inc. – Pittsburgh, Pennsylvania
Kennecott Energy, Inc. – Gillette, Wyoming
Colorado Springs Municipal Power Authority – Colorado Springs, Colorado
University of Alaska College of Mines – Fairbanks, Alaska
University of Utah College of Mines – Salt Lake City, Utah

Proposal Title: Improved Boiler Performance through On-Line Coal Analysis

Commercial Application: New Facilities and Existing Facilities

Technology Type: Measure coal quality by nuclear magnetic resonance

Estimated total cost of project: (May not represent final negotiated costs.)

Total Estimated Cost: $ 372,298

Estimated DOE Share: $ 185,913

Estimated Private Share: $ 186,385

Anticipated Project Sites:

Colorado Springs, Colorado – Martin Drake Power Station
Fairbanks, Alaska – University of Alaska Coal-Fired Pilot Power Plant

Type of coal to be used: typically western coal but not uniformly sourced by design.

Size or scale of project: 100 to 500 tons per day coal input to boiler of power generator

Duration of proposed project: From date of award 12 months

PRIMARY CONTACT: For additional information, interested parties should contact:

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Company: Harrison R. Cooper Systems, Inc.
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ALTERNATIVE CONTACT:

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Brief description of project:

Efficiency in power production through converting combustion heat to steam for electrical generation, is subject to variability of coal quality charged to combustion. Losses in efficiency through coal variability may be in range of two to three percent of theoretical maximum efficiency of a coal combustion system. By monitoring coal quality in real time, combustion controls can be more exactly managed to narrow the gap between actual performance and theoretical performance.

A magnetic resonance instrument has been developed for on-line analysis of coal, allowing measurement of the combustion heat yield in real time. When this instrument provides coal-quality data to an advanced control system, incorporating expert systems, fuzzy logic, neural networks, and genetic algorithms, it will be possible to markedly improve the efficiency of the boiler, and also limit the emission of undesirable gases.

On-line coal analysis will also make it possible to blend coals from various sources, providing potential reductions in fuel costs while maintaining combustion efficiency and meeting emission requirements.